

Accepted - 09/23/2022

NV



1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

April 15, 2022

Mr. Cory Smith, Environmental Specialist Supervisor
New Mexico Oil Conservation Division – District 3
1000 Rio Brazos Road
Aztec, New Mexico 87410

Re: Status Report – 1st Quarter 2022
Fifield 5 No. 1 (SE ¼, SW ¼, Sec. 5, T29N, R11W)
Hilcorp Energy Company
San Juan County, New Mexico
OCD Incident No.: NVF1718155324

Dear Mr. Smith:

On behalf of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) presents this report to document activities conducted during the 1st quarter 2022 (1Q22) at the Fifield 5 No. 1 (Site). The Site is a plugged well site located in northeast San Juan County, New Mexico (Figures 1 through 3).

Environmental Setting and Site Geology

The area immediately surrounding the Site consists of sparse vegetative cover comprised primarily of scrub brush. Area topography consists of ridges divided by shallow valleys with intermittent streams that flow south into the San Juan River. The Site is situated east of an unnamed mesa; average elevation at the Site is approximately 5,786 feet (ft) above mean sea level. The nearest water way is an unnamed intermittent stream located approximately 1,350 ft west of the Site. The intermittent stream empties into the San Juan River, approximately 3.4 miles south of the Site.

According to the U.S. Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), the Site soil consists of the Gypsiorthids-Badland-Stumble complex, 5 to 30 percent slopes. The surface layer consists of sandy loam, underlain by lithic bedrock encountered between 16 to 20 inches below ground surface (bgs). Native salinity of the soil is very slightly saline to slightly saline (2.0 to 4.0 millimhos per centimeter (mmhos/cm)).

Site History

Release Event

The Fifield 5 No. 1 well has been plugged and all surface equipment removed from the Site; however, Hilcorp's Hali Meador #005R is located immediately west of the Site and remains active. Historically, the Site has consisted of a well head, line heater and separator with associated below-grade tank (BGT) for produced water, sales meter, and tank battery comprised of one above-ground storage tank

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(AST) and one BGT. On or about 06/01/17, removal and closure of the BGT revealed historical contamination beneath the BGT. All surface equipment was removed, and the well was plugged and abandoned.

Investigation and Site Characterization

Initial assessment efforts were conducted by Rule Engineering, LLC (Rule), a subcontractor of ConocoPhillips Company (ConocoPhillips). Hilcorp acquired the property in 2017 and Rule conducted additional assessments in 2018. All findings by Rule Engineering are documented in Timberwolf's *Site Characterization and Remedial Action Plan*, dated February 28, 2019. The initial assessment identified the following constituents of concern (COCs): benzene, toluene, ethylbenzene, and xylene (BTEX) and Total Petroleum Hydrocarbons (TPH).

On 03/20/19, Timberwolf additional borings were installed at the Site to delineate petroleum hydrocarbon impacts vertically and horizontally in soil. All findings are documented in the Timberwolf's *Site Characterization Report and Remedial Action Plan*, dated June 14, 2019.

Remediation – SVE System

In 2019, Hilcorp installed a soil vapor extraction (SVE) system to treat impacted soil related to historical pit tank releases. The SVE system is comprised of 18 SVE wells, 6 vent wells, and a SVE trailer (housing: control valves, flow and vacuum gauges, manifolds, fluid-air separator, automated controls, and a vacuum pump). The system remained inoperative while awaiting a power source.

In September 2021, Hilcorp installed a power source for the SVE system. The power source is a skid-mounted gas-fired motor with a pulley and belt drive apparatus to transfer power to a vacuum pump. The new vacuum pump was plumbed into the existing SVE trailer; the automation system was by-passed so that all legs remain open.

Work conducted at this Site is documented in the following reports:

- *Site Characterization and Remedial Action Plan*, dated 02/28/19
- *Site Characterization and Remedial Action Plan*, dated 07/14/19
- *Status Report – 1st Quarter 2020*, dated 09/20/21
- *Status Report – 2nd Quarter 2020*, dated 09/27/21
- *Status Report – 3rd Quarter 2020*, dated 09/27/21
- *Status Report – 4th Quarter 2020*, dated 09/27/21
- *Status Report – 1st Quarter 2021*, dated 09/27/21
- *Status Report – 2nd Quarter 2021*, dated 09/27/21
- *Status Report – 3rd Quarter 2021*, dated 11/01/21
- *Status Report – 4th Quarter 2021*, dated 01/29/22

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SVE System Operations

Runtimes, flow rates, runtime percentage, and liquid recovery for 1Q22 is documented in the table below:

Table 1. System Runtime, Flow Rates, and Recovery – 1Q22

Measured Parameter	1Q22
Runtime (hours)	2,060
Percent Runtime	100
Average CFM	15
Recovered Liquids (gallons)	2.0

% - percentage
 CFM – cubic feet per minute
 N/A – not applicable

During 1Q22, Hilcorp personnel six (6) operation and maintenance (O&M) events and Timberwolf personnel conducted one (1) O&M event. The first O&M event in January revealed that an hour meter failure; the hour meter was replaced on or about 01/27/22. A field log of O&M events and maintenance performed is provided in the attached Table A-1.

The 1Q22 had 2,159 hours in the quarter. During 1Q22, the SVE system was not shut-in for routine maintenance. The system ran for 2,122 hours based on hour meter readings collected on 02/01/22 and 03/30/22 and Cygnet data; therefore, the system runtime in 1Q22 was 98.3 percent (%). Photographs of relevant meter readings are documented in the attached Photographic Log.

Collection and Analysis of Quarterly Soil-Gas Sample

On 03/07/22, a composite soil-gas sample was collected from all SVE legs using a single Tedlar bag.

The Tedlar bag was connected to the SVE trailer sampling port, which is situated downstream of the 4-leg manifold and upstream of the air-water separator. The sampling port valve was opened to purge air within the tubing between the sampling port and Tedlar bag. After purging, the Tedlar bag valve was opened to collect the air sample.

The gas sample was shipped to Hall Environmental and Analytical Laboratory (HEAL) in Albuquerque, New Mexico. HEAL subcontracted the analysis to Pace National in Mt. Juliet, Tennessee for chemical analysis. All sample transfers were conducted under proper chain-of-custody protocol.

The sample was analyzed for volatile organic compounds (VOCs) using EPA Method Toxic Organics 15 (i.e., TO-15) and Organic Compounds (GC) by ASTM Method D1946. Laboratory report and chain-of-custody documents are attached.

Constituents that exceeded laboratory detection limits are presented in Table 2; analytical results of all constituents are presented in the attached Table A-2.

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Table 2. Quarterly Soil-Gas Analysis – 03/07/22

Volatile Organic Carbons	SVE (mg/m ³)
Volatile Organic Carbons, mg/m³	
Benzene	5.69
Cyclohexane	39.9
Ethylbenzene	4.27
4-Ethyltoluene	3.95
Heptane	75.7
N-Hexane	41.6
Isopropylbenzene	0.674
Methyl Cyclohexane	171
Toluene	48.2
1,2,3-Trimethylbenzene	0.594
1,2,4-Trimethylbenzene	3.7
1,3,5-Trimethylbenzene	3.34
Total Xylenes	32.64
TPH (GC/MS) Low Fraction	1,160
Organic Compounds, %	
Oxygen	21.3
Carbon Dioxide	< 0.50

mg/m³ – milligrams per cubic meter

% - percent

Mass Removal

Timberwolf used the results from the soil gas analysis (as reported in Table 2), flow rates, and runtimes to calculate constituent mass removal. Mass removal of BTEX and associated recovered volumes for 1Q22 are presented in Table 3 below.

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Table 3. Mass Removal and Associated Volume – 1Q22

Constituent	Mass Removal (kg) ¹	Total Mass Removed (lbs) ²	Recovered Volume (bbl)
Benzene	0.31	0.68	NC
Toluene	2.61	5.73	NC
Ethylbenzene	0.23	0.51	NC
Xylene	1.77	3.88	NC
GRO	62.7	138.1	0.51

¹Calculation = minutes ran * CFM * Concentration (mg/m³) * 1 M³/35.3147 ft³*1g/1000 mg * 1 kg/1000 g

²Calculation = [Mass Removal] * 2.2 lbs/kg

GRO = from TPH (GC/MS) Low Fraction (i.e., gasoline range organics)

kg – kilograms

bbl -barrel

lbs – pounds

NC – not calculated

Assumptions:

- API Gravity = 52
- Concentrations of VOCs in soil-gas vapors have remained static since the collection of initial soil gas sample
- Runtime readings based on hour meter readings on 3/30/22 and Cygnet remote monitoring data.

Summary

The SVE system runtime during 1Q22 was 98.3 % of the total available hours for 1Q22. Runtime hours are based on hour meter readings taken on 02/01/22 and 3/30/22 and Cygnet data. Cygnet remote monitoring system confirms operation through the quarter. Mass removal calculations indicated 0.51 bbl of GRO recovered during the quarter.

Further Actions – 2nd Quarter 2022

During 2Q22, the following activities are planned for the Site:

- Conduct bi-weekly Site O&M to ensure proper system function and drain any water/condensate accumulation in the moisture separator as needed
- Collect a quarterly soil-gas sample and analyze for the following constituents:
 - TO-15
 - GRO
 - Oxygen
 - Carbon dioxide
- Prepare a 2Q22 status report

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If you have any questions regarding this report or need further assistance, please call us at 979-324-2139.

Sincerely,
Timberwolf Environmental, LLC



Kevin Cole
Project Manager



Jim Foster
President

Attachments: Figures
Tables
Photographic Log
Laboratory Report

cc: Kate Kaufman, Hilcorp Energy Company

Figures

Timberwolf Project No. HEC-190009

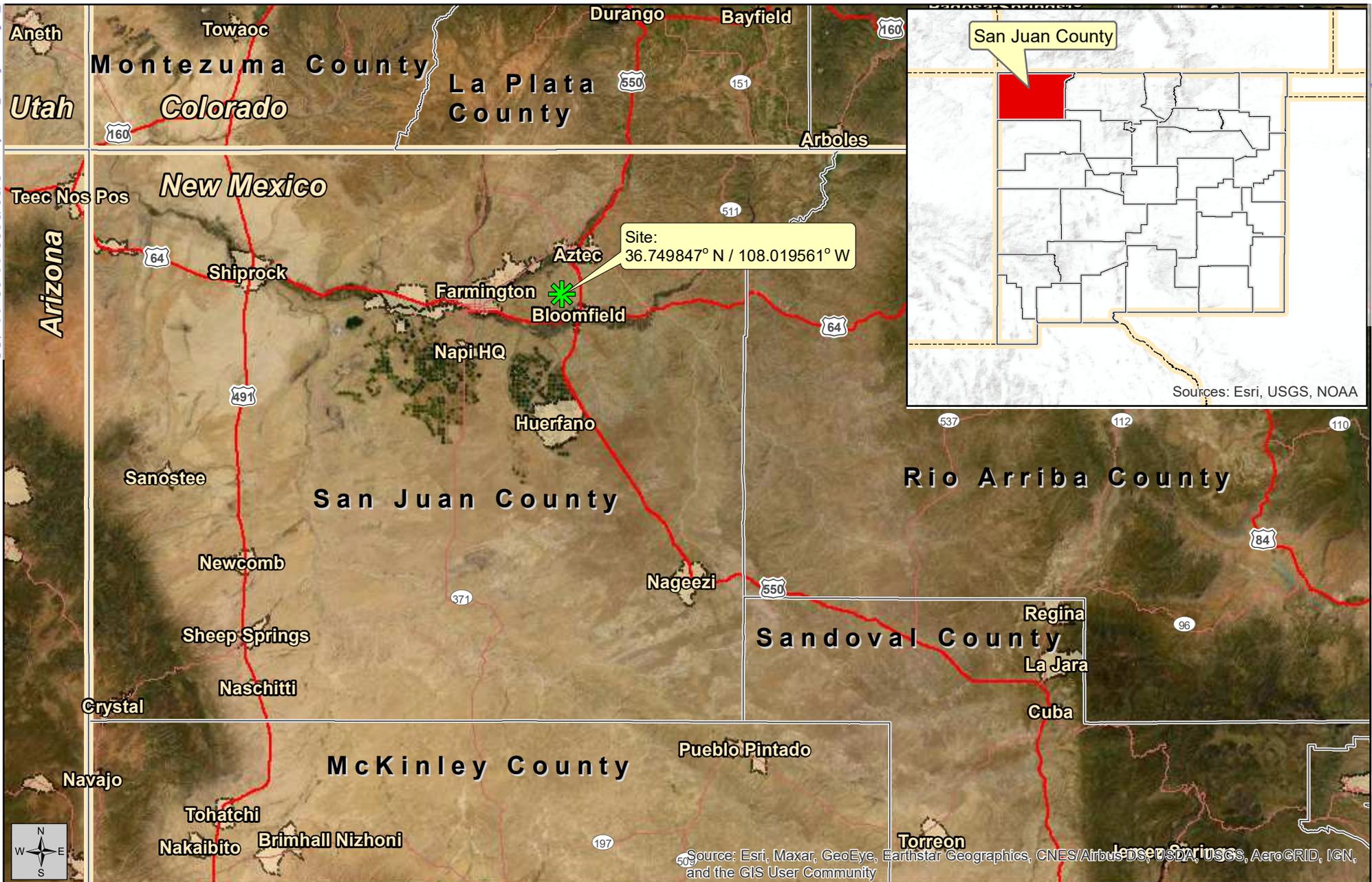


Figure 1
Site Location Map

Status Report - 1st Quarter 2022

March 28, 2022



Created By:
Kevin Cole
TE Project No.: HEC-190009

Fifield 5 No. 1 (OCD Incident No. NVF1718155324)
Hilcorp Energy Company
San Juan County, New Mexico

1:1,250,000



Datum: NAD83
Imagery Source: ESRI
Vector Source: ESRI and TE

Site

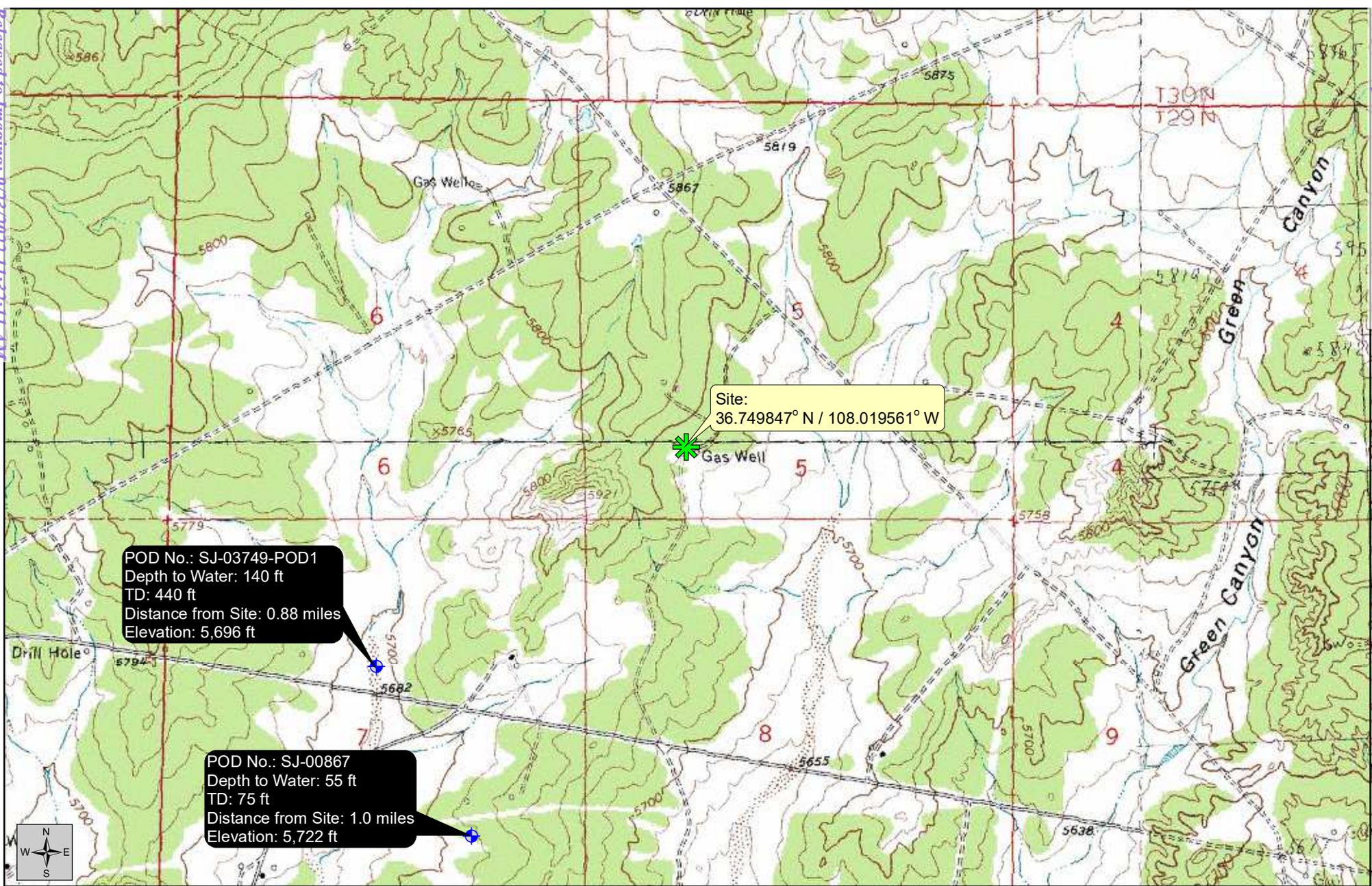


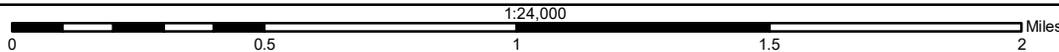
Figure 2
Topographic Map

Status Report - 1st Quarter 2022

March 28, 2022



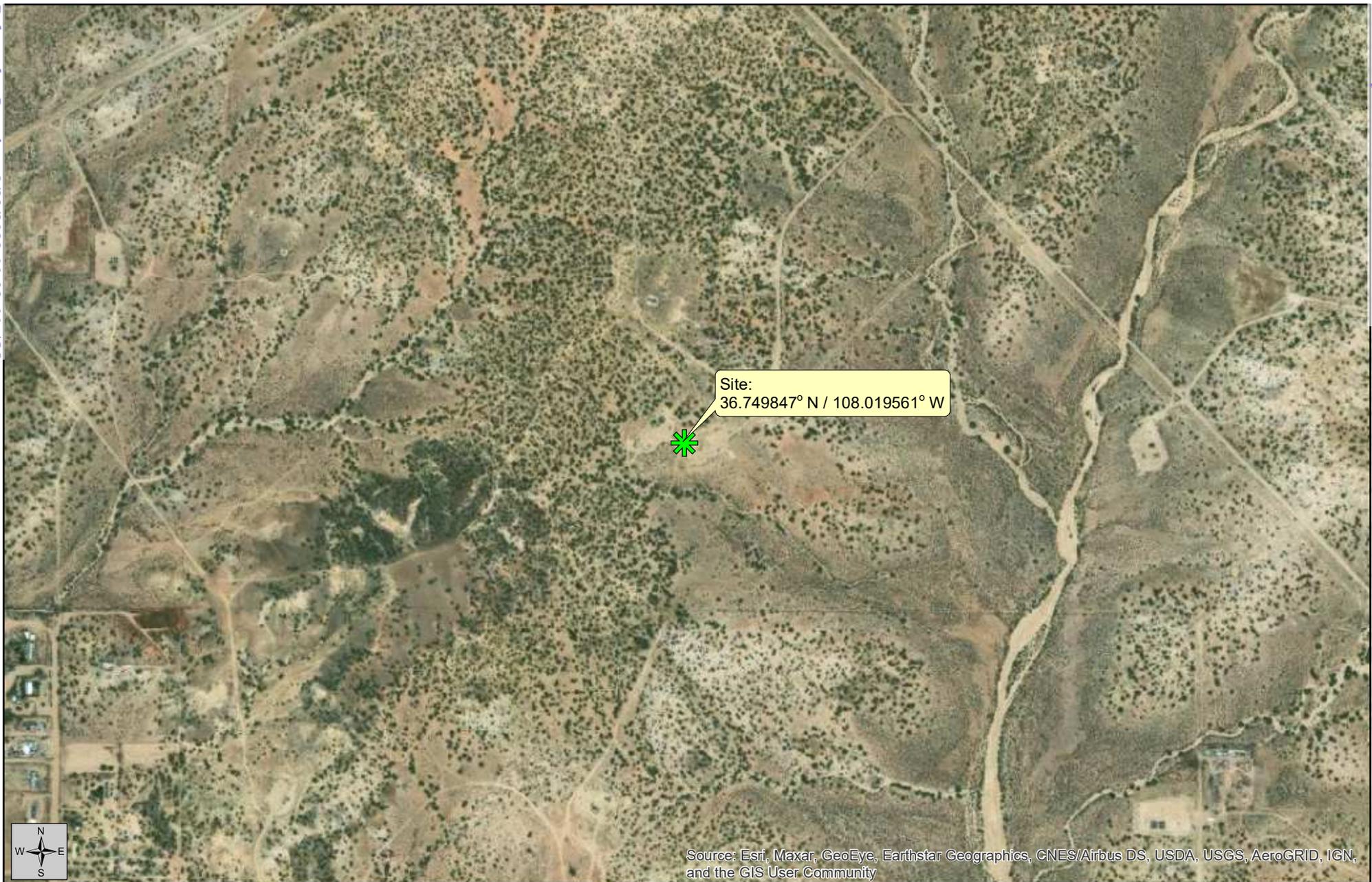
Created By:
Kevin Cole
TE Project No.: HEC-190009



Fifield 5 No. 1 (OCD Incident No. NVF1718155324)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: USGS
Quads: Aztec, Bloomfield,
Flora Vista, Horn Canyon
Vector Source: TE

-  Site
-  Water Well



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

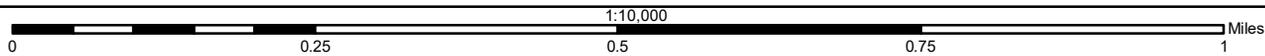
Figure 3
Aerial Map

Status Report - 1st Quarter 2022

March 28, 2022



Created By:
Kevin Cole
TE Project No.: HEC-190009



Fifield 5 No. 1 (OCD Incident No. NVF1718155324)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

 Site

Photographic Log

Timberwolf Project No. HEC-190009



1920 W. Villa Maria Suite 205
 Bryan, TX 77807
 (979) 485-9094
 www.teamtimberwolf.com

PHOTOGRAPHIC LOG

Project No.:	HEC-190009	Client:	Hilcorp Energy Company
Project Name:	Fifield 5 No. 1	Site Location:	San Juan County, New Mexico
Task Description:	1 st Quarter 2022 Report	Date:	January-March, 2022

Photo No.:
1

Direction:
N/A

Comments:
View of hour meter from February 1, 2022.

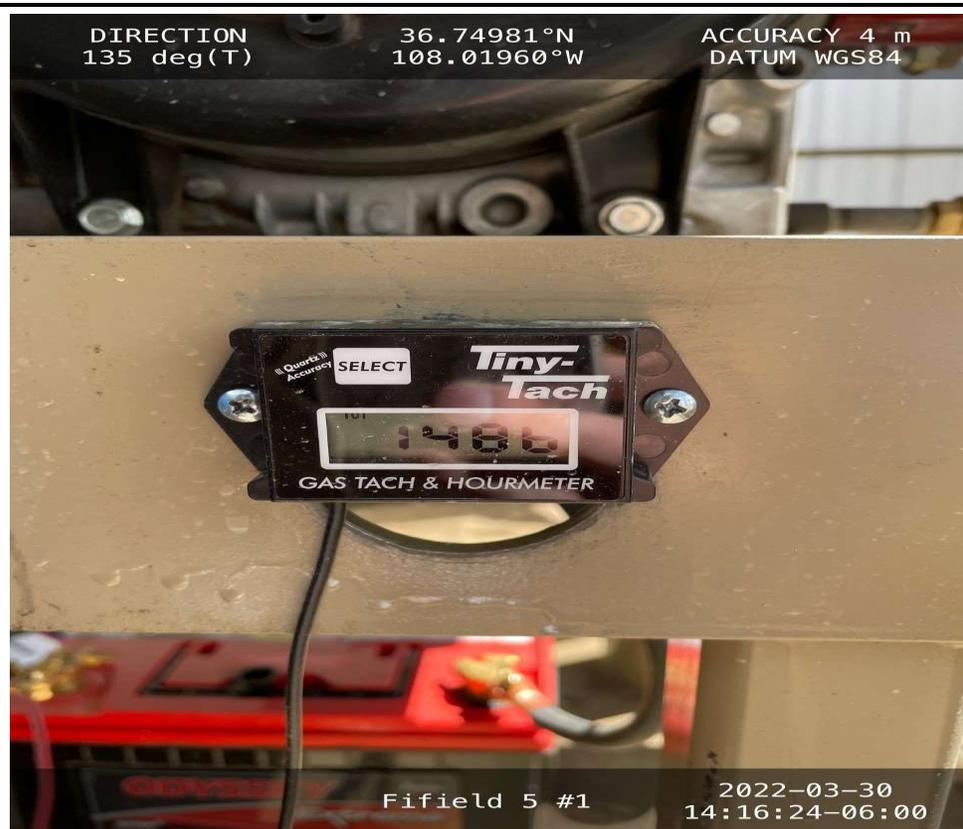
Note: 121 hours 51 minutes. Hour meter replaced on 01/27/22.



Photo No.:
2

Direction:
N/A

Comments:
View of hour meter from the end of March 2022.



Tables

**Table A-1. Operation and Maintenance Events
Status Report - 1st Quarter 2022
Fifield 5 No. 1 (OCD Incident No. NVF1718155324)
San Juan County, New Mexico**

Date	Hour Meter Reading (hr)	Water/Condensate Recovered (gal)	Maintenance and Activities Performed
01/06/22	360*	0	<ul style="list-style-type: none"> Hilcorp operator performed SVE system O&M checks Hour Meter failure noted; all other system functions operating correctly
01/24/22	--	0	<ul style="list-style-type: none"> Hilcorp operator performed SVE system O&M checks Hour Meter replaced; All system functions operating correctly
01/27/22	0.0	--	<ul style="list-style-type: none"> Hour Meter replaced
02/01/22	121.9	0	<ul style="list-style-type: none"> Hilcorp operator performed SVE system O&M checks All system functions operating correctly
02/18/22	527.0	0	<ul style="list-style-type: none"> Hilcorp operator performed SVE system O&M checks All system functions operating correctly
03/07/22	935.0	0	<ul style="list-style-type: none"> Hilcorp operator performed SVE system O&M checks All system functions operating correctly
03/08/22	--	2	<ul style="list-style-type: none"> Timberwolf personel performed SVE system O&M checks All system functions operating correctly
03/30/22	1486.0	0	<ul style="list-style-type: none"> Hilcorp operator performed SVE system O&M checks All system functions operating correctly

gal - gallons

hr - hours

*Hour meter failure noted; replaced on 1/27/22

-- data not recorded

**Table A-2. Gas Analysis 03/07/22
Status Report - 1st Quarter 2022
Fifield 5 No. 1 (OCD Incident No. NVF1718155324)
San Juan County, New Mexico**

Volatiles (mg/m ³)	SVE
Acetone	< 0.0594
Allyl Chloride	< 0.0125
Benzene	5.69
Benzyl Chloride	< 0.0208
Bromodichloromethane	< 0.0268
Bromoform	< 0.124
Bromomethane	< 0.0155
1,3-Butadiene	< 0.0885
Carbon Disulfide	< 0.0124
Carbon Tetrachloride	< 0.0252
Chlorobenzene	< 0.0185
Chlorodifluoromethane	< 0.0142
Chloroethane	< 0.0106
Chloroform	< 0.0195
Chloromethane	< 0.00826
2-Chlorotoluene	< 0.0206
Cyclohexane	39.9
Dibromochloromethane	< 0.034
1,2-Dibromoethane	< 0.0308
1,2-Dichlorobenzene	< 0.024
1,3-Dichlorobenzene	< 0.024
1,4-Dichlorobenzene	< 0.024
1,2-Dichloroethane	< 0.0162
1,1-Dichloroethane	< 0.016
1,1-Dichloroethene	< 0.0159
Cis-1,2-Dichloroethene	< 0.0159
Trans-1,2-Dichloroethene	< 0.0159
1,2-Dichloropropane	< 0.0185
Cis-1,3-Dichloropropene	< 0.0182
Trans-1,3-Dichloropropene	< 0.0182
1,1-Difluoroethane	< 0.054
1,4-Dioxane	< 0.0144
Ethanol	< 0.0471
Ethyl acetate	< 0.0144
Ethylbenzene	4.27
4-Ethyltoluene	3.95
Trichlorofluoromethane	< 0.0225
Dichlorodifluoromethane	< 0.0198

**Table A-2. Gas Analysis 03/07/22
Status Report - 1st Quarter 2022
Fifield 5 No. 1 (OCD Incident No. NVF1718155324)
San Juan County, New Mexico**

Volatiles (mg/m ³)	SVE
1,1,2-Trichlorotrifluoroethane	< 0.0307
1,2-Dichlorotetrafluoroethane	< 0.028
Heptane	75.7
Hexachloro-1,3-Butadiene	< 0.135
N-Hexane	41.6
Isopropylbenzene	0.674
Methylene Chloride	< 0.0139
Methyl Butyl Ketone	< 0.102
Methyl Cyclohexane	171
2-Butanone (Mek)	< 0.0737
4-Methyl-2-Pentanone (Mibk)	< 0.102
Methyl Methacrylate	< 0.0164
Methyl Tert-Butyl Ether	< 0.0144
Naphthalene	< 0.066
2-Propanol	< 0.0615
Propene	< 0.043
Styrene	< 0.017
Tert-Amyl Ethyl Ether	< 0.019
1,1,2,2-Tetrachloroethane	< 0.0275
Tetrachloroethene	< 0.0272
Tetrahydrofuran	< 0.0118
Toluene	48.2
1,2,4-Trichlorobenzene	< 0.0933
1,1,1-Trichloroethane	< 0.0218
1,1,2-Trichloroethane	< 0.0218
Trichloroethene	< 0.0214
1,2,3-Trimethylbenzene	0.594
1,2,4-Trimethylbenzene	3.7
1,3,5-Trimethylbenzene	3.34
2,2,4-Trimethylpentane	< 0.0187
Vinyl Chloride	< 0.0102
Vinyl Bromide	< 0.0175
Vinyl Acetate	< 0.0141
Total Xylene	32.64
TPH (GC/MS) Low Fraction	1160
Oxygen (%)	21.3
Carbon Dioxide (%)	< 2.00
Carbon Monoxide (%)	< 0.500

**Table A-2. Gas Analysis 03/07/22
Status Report - 1st Quarter 2022
Fifield 5 No. 1 (OCD Incident No. NVF1718155324)
San Juan County, New Mexico**

Volatiles (mg/m³)	SVE
Mehtane (%)	< 0.400

mg/m3 - milligrams per cubic meter

% - percent

Laboratory Report and Chain-of-custody Documents

Timberwolf Project No. HEC-190009



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

March 16, 2022

Kate Kaufman
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Fifield 5 1

OrderNo.: 2203433

Dear Kate Kaufman:

Hall Environmental Analysis Laboratory received 1 sample(s) on 3/8/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



ANALYTICAL REPORT

March 16, 2022

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1469234

Samples Received: 03/09/2022

Project Number:

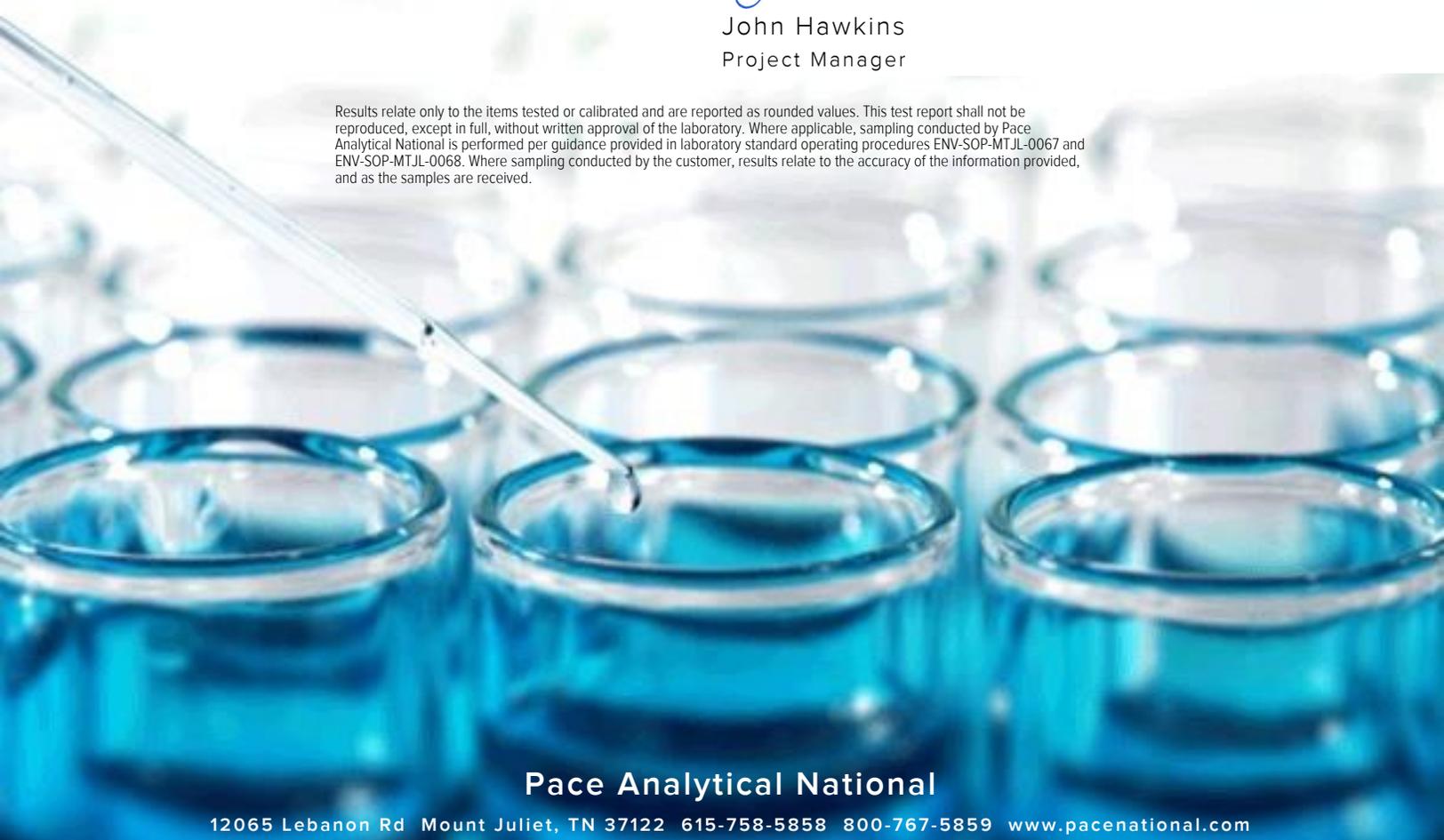
Description:

Report To: Andy Freeman
 4901 Hawkins NE
 Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

Cp: Cover Page 1

Tc: Table of Contents 2

Ss: Sample Summary 3

Cn: Case Narrative 4

Sr: Sample Results 5

2203433-001A SVE SAMPLE L1469234-01 5

Qc: Quality Control Summary 7

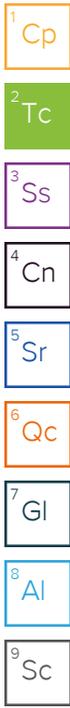
Volatile Organic Compounds (MS) by Method TO-15 7

Organic Compounds (GC) by Method D1946 13

Gl: Glossary of Terms 14

Al: Accreditations & Locations 15

Sc: Sample Chain of Custody 16



2203433-001A SVE SAMPLE L1469234-01 Air

Collected by
Collected date/time
Received date/time
03/07/22 11:15 03/09/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1829614	20	03/10/22 02:37	03/10/22 02:37	CAW	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1830557	200	03/11/22 01:24	03/11/22 01:24	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1830948	1000	03/12/22 01:03	03/12/22 01:03	DAH	Mt. Juliet, TN
Organic Compounds (GC) by Method D1946	WG1832571	1	03/15/22 12:53	03/15/22 12:53	DBB	Mt. Juliet, TN

- ¹Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Qc
- ⁷Gl
- ⁸Al
- ⁹Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Sample Delivery Group (SDG) Narrative

Sample received in tedlar bag.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1469234-01	2203433-001A SVE SAMPLE	TO-15

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Collected date/time: 03/07/22 11:15

L1469234

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	25.0	59.4	ND	ND		20	WG1829614
Allyl chloride	107-05-1	76.53	4.00	12.5	ND	ND		20	WG1829614
Benzene	71-43-2	78.10	4.00	12.8	1780	5690		20	WG1829614
Benzyl Chloride	100-44-7	127	4.00	20.8	ND	ND		20	WG1829614
Bromodichloromethane	75-27-4	164	4.00	26.8	ND	ND		20	WG1829614
Bromoform	75-25-2	253	12.0	124	ND	ND		20	WG1829614
Bromomethane	74-83-9	94.90	4.00	15.5	ND	ND		20	WG1829614
1,3-Butadiene	106-99-0	54.10	40.0	88.5	ND	ND		20	WG1829614
Carbon disulfide	75-15-0	76.10	4.00	12.4	ND	ND		20	WG1829614
Carbon tetrachloride	56-23-5	154	4.00	25.2	ND	ND		20	WG1829614
Chlorobenzene	108-90-7	113	4.00	18.5	ND	ND		20	WG1829614
Chloroethane	75-00-3	64.50	4.00	10.6	ND	ND		20	WG1829614
Chloroform	67-66-3	119	4.00	19.5	ND	ND		20	WG1829614
Chloromethane	74-87-3	50.50	4.00	8.26	ND	ND		20	WG1829614
2-Chlorotoluene	95-49-8	126	4.00	20.6	ND	ND		20	WG1829614
Cyclohexane	110-82-7	84.20	40.0	138	11600	39900		200	WG1830557
Dibromochloromethane	124-48-1	208	4.00	34.0	ND	ND		20	WG1829614
1,2-Dibromoethane	106-93-4	188	4.00	30.8	ND	ND		20	WG1829614
1,2-Dichlorobenzene	95-50-1	147	4.00	24.0	ND	ND		20	WG1829614
1,3-Dichlorobenzene	541-73-1	147	4.00	24.0	ND	ND		20	WG1829614
1,4-Dichlorobenzene	106-46-7	147	4.00	24.0	ND	ND		20	WG1829614
1,2-Dichloroethane	107-06-2	99	4.00	16.2	ND	ND		20	WG1829614
1,1-Dichloroethane	75-34-3	98	4.00	16.0	ND	ND		20	WG1829614
1,1-Dichloroethene	75-35-4	96.90	4.00	15.9	ND	ND		20	WG1829614
cis-1,2-Dichloroethene	156-59-2	96.90	4.00	15.9	ND	ND		20	WG1829614
trans-1,2-Dichloroethene	156-60-5	96.90	4.00	15.9	ND	ND		20	WG1829614
1,2-Dichloropropane	78-87-5	113	4.00	18.5	ND	ND		20	WG1829614
cis-1,3-Dichloropropene	10061-01-5	111	4.00	18.2	ND	ND		20	WG1829614
trans-1,3-Dichloropropene	10061-02-6	111	4.00	18.2	ND	ND		20	WG1829614
1,4-Dioxane	123-91-1	88.10	4.00	14.4	ND	ND		20	WG1829614
Ethanol	64-17-5	46.10	25.0	47.1	ND	ND		20	WG1829614
Ethylbenzene	100-41-4	106	4.00	17.3	986	4270		20	WG1829614
4-Ethyltoluene	622-96-8	120	4.00	19.6	805	3950		20	WG1829614
Trichlorofluoromethane	75-69-4	137.40	4.00	22.5	ND	ND		20	WG1829614
Dichlorodifluoromethane	75-71-8	120.92	4.00	19.8	ND	ND		20	WG1829614
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	4.00	30.7	ND	ND		20	WG1829614
1,2-Dichlorotetrafluoroethane	76-14-2	171	4.00	28.0	ND	ND		20	WG1829614
Heptane	142-82-5	100	40.0	164	18500	75700		200	WG1830557
Hexachloro-1,3-butadiene	87-68-3	261	12.6	135	ND	ND		20	WG1829614
n-Hexane	110-54-3	86.20	126	444	11800	41600		200	WG1830557
Isopropylbenzene	98-82-8	120.20	4.00	19.7	137	674		20	WG1829614
Methylene Chloride	75-09-2	84.90	4.00	13.9	ND	ND		20	WG1829614
Methyl Butyl Ketone	591-78-6	100	25.0	102	ND	ND		20	WG1829614
2-Butanone (MEK)	78-93-3	72.10	25.0	73.7	ND	ND		20	WG1829614
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	25.0	102	ND	ND		20	WG1829614
Methyl methacrylate	80-62-6	100.12	4.00	16.4	ND	ND		20	WG1829614
MTBE	1634-04-4	88.10	4.00	14.4	ND	ND		20	WG1829614
Naphthalene	91-20-3	128	12.6	66.0	ND	ND		20	WG1829614
2-Propanol	67-63-0	60.10	25.0	61.5	ND	ND		20	WG1829614
Propene	115-07-1	42.10	25.0	43.0	ND	ND		20	WG1829614
Styrene	100-42-5	104	4.00	17.0	ND	ND		20	WG1829614
1,1,2,2-Tetrachloroethane	79-34-5	168	4.00	27.5	ND	ND		20	WG1829614
Tetrachloroethylene	127-18-4	166	4.00	27.2	ND	ND		20	WG1829614
Tetrahydrofuran	109-99-9	72.10	4.00	11.8	ND	ND		20	WG1829614
Toluene	108-88-3	92.10	100	377	12800	48200		200	WG1830557
1,2,4-Trichlorobenzene	120-82-1	181	12.6	93.3	ND	ND		20	WG1829614

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Collected date/time: 03/07/22 11:15

L1469234

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	4.00	21.8	ND	ND		20	WG1829614
1,1,2-Trichloroethane	79-00-5	133	4.00	21.8	ND	ND		20	WG1829614
Trichloroethylene	79-01-6	131	4.00	21.4	ND	ND		20	WG1829614
1,2,4-Trimethylbenzene	95-63-6	120	4.00	19.6	754	3700		20	WG1829614
1,3,5-Trimethylbenzene	108-67-8	120	4.00	19.6	680	3340		20	WG1829614
2,2,4-Trimethylpentane	540-84-1	114.22	4.00	18.7	ND	ND		20	WG1829614
Vinyl chloride	75-01-4	62.50	4.00	10.2	ND	ND		20	WG1829614
Vinyl Bromide	593-60-2	106.95	4.00	17.5	ND	ND		20	WG1829614
Vinyl acetate	108-05-4	86.10	4.00	14.1	ND	ND		20	WG1829614
m&p-Xylene	1330-20-7	106	80.0	347	5850	25400		200	WG1830557
o-Xylene	95-47-6	106	4.00	17.3	1670	7240		20	WG1829614
TPH (GC/MS) Low Fraction	8006-61-9	101	40000	165000	281000	1160000	J4	200	WG1830557
1,1-Difluoroethane	75-37-6	66.05	20.0	54.0	ND	ND		20	WG1829614
1,2,3-Trimethylbenzene	526-73-8	120.10	4.00	19.6	121	594		20	WG1829614
Chlorodifluoromethane	75-45-6	86.50	4.00	14.2	ND	ND		20	WG1829614
Ethyl acetate	141-78-6	88	4.00	14.4	ND	ND		20	WG1829614
Methyl Cyclohexane	108-87-2	98.1860	200	803	42500	171000		1000	WG1830948
Tert-Amyl Ethyl Ether	919-94-8	116.20	4.00	19.0	ND	ND		20	WG1829614
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		170		J1		WG1829614
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		107				WG1830557
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		99.5				WG1830948

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Sample Narrative:

L1469234-01 WG1829614: Surrogate failure due to matrix interference

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	5.00	21.3		1	WG1832571
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1832571
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1832571
Methane	74-82-8	16	0.400	ND		1	WG1832571

Volatile Organic Compounds (MS) by Method TO-15

[L1469234-01](#)

Method Blank (MB)

(MB) R3768290-3 03/09/22 10:25

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzene	U		0.0715	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	0.0560	U	0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
Ethanol	U		0.265	1.25
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
Isopropylbenzene	U		0.0777	0.200
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25

1 Cp
 2 Tc
 3 Ss
 4 Cn
 5 Sr
 6 Qc
 7 Gl
 8 Al
 9 Sc

Volatile Organic Compounds (MS) by Method TO-15

[L1469234-01](#)

Method Blank (MB)

(MB) R3768290-3 03/09/22 10:25

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl Methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	0.170	U	0.0932	1.25
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
2,2,4-Trimethylpentane	U		0.133	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
o-Xylene	U		0.0828	0.200
1,1-Difluoroethane	U		0.129	1.00
1,2,3-Trimethylbenzene	U		0.0805	0.200
Chlorodifluoromethane	U		0.131	0.200
Ethyl acetate	U		0.100	0.200
Tert-Amyl Ethyl Ether	U		0.0778	0.200
(S) 1,4-Bromofluorobenzene	85.5			60.0-140

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3768290-1 03/09/22 08:58 • (LCSD) R3768290-2 03/09/22 09:42

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Acetone	3.75	3.89	3.24	104	86.4	70.0-130			18.2	25
Allyl Chloride	3.75	4.17	3.82	111	102	70.0-130			8.76	25
Benzene	3.75	4.17	4.05	111	108	70.0-130			2.92	25
Benzyl Chloride	3.75	3.85	3.71	103	98.9	70.0-152			3.70	25
Bromodichloromethane	3.75	4.00	3.97	107	106	70.0-130			0.753	25

Volatile Organic Compounds (MS) by Method TO-15

L1469234-01

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3768290-1 03/09/22 08:58 • (LCSD) R3768290-2 03/09/22 09:42

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromoform	3.75	3.97	3.84	106	102	70.0-130			3.33	25
Bromomethane	3.75	3.72	4.43	99.2	118	70.0-130			17.4	25
1,3-Butadiene	3.75	3.58	3.83	95.5	102	70.0-130			6.75	25
Carbon disulfide	3.75	3.80	3.85	101	103	70.0-130			1.31	25
Carbon tetrachloride	3.75	3.85	3.79	103	101	70.0-130			1.57	25
Chlorobenzene	3.75	4.19	4.24	112	113	70.0-130			1.19	25
Chloroethane	3.75	3.61	4.43	96.3	118	70.0-130			20.4	25
Chloroform	3.75	3.73	3.81	99.5	102	70.0-130			2.12	25
Chloromethane	3.75	3.96	3.84	106	102	70.0-130			3.08	25
2-Chlorotoluene	3.75	4.00	3.89	107	104	70.0-130			2.79	25
Dibromochloromethane	3.75	4.16	4.11	111	110	70.0-130			1.21	25
1,2-Dibromoethane	3.75	4.21	4.16	112	111	70.0-130			1.19	25
1,2-Dichlorobenzene	3.75	4.01	3.90	107	104	70.0-130			2.78	25
1,3-Dichlorobenzene	3.75	4.05	3.92	108	105	70.0-130			3.26	25
1,4-Dichlorobenzene	3.75	4.04	4.01	108	107	70.0-130			0.745	25
1,2-Dichloroethane	3.75	3.89	3.81	104	102	70.0-130			2.08	25
1,1-Dichloroethane	3.75	3.77	3.83	101	102	70.0-130			1.58	25
1,1-Dichloroethene	3.75	3.75	3.77	100	101	70.0-130			0.532	25
cis-1,2-Dichloroethene	3.75	3.74	3.69	99.7	98.4	70.0-130			1.35	25
trans-1,2-Dichloroethene	3.75	3.78	3.88	101	103	70.0-130			2.61	25
1,2-Dichloropropane	3.75	4.12	4.11	110	110	70.0-130			0.243	25
cis-1,3-Dichloropropene	3.75	3.98	3.92	106	105	70.0-130			1.52	25
trans-1,3-Dichloropropene	3.75	3.84	3.82	102	102	70.0-130			0.522	25
1,4-Dioxane	3.75	4.16	4.08	111	109	70.0-140			1.94	25
Ethanol	3.75	3.55	3.67	94.7	97.9	55.0-148			3.32	25
Ethylbenzene	3.75	4.00	3.91	107	104	70.0-130			2.28	25
4-Ethyltoluene	3.75	3.86	3.84	103	102	70.0-130			0.519	25
Trichlorofluoromethane	3.75	3.61	3.97	96.3	106	70.0-130			9.50	25
Dichlorodifluoromethane	3.75	3.91	3.83	104	102	64.0-139			2.07	25
1,1,2-Trichlorotrifluoroethane	3.75	4.02	4.11	107	110	70.0-130			2.21	25
1,2-Dichlorotetrafluoroethane	3.75	4.16	4.03	111	107	70.0-130			3.17	25
Hexachloro-1,3-butadiene	3.75	4.11	3.59	110	95.7	70.0-151			13.5	25
Isopropylbenzene	3.75	4.11	3.94	110	105	70.0-130			4.22	25
Methylene Chloride	3.75	3.60	3.75	96.0	100	70.0-130			4.08	25
Methyl Butyl Ketone	3.75	4.05	3.97	108	106	70.0-149			2.00	25
Methyl Ethyl Ketone	3.75	3.98	3.73	106	99.5	70.0-130			6.49	25
4-Methyl-2-pentanone (MIBK)	3.75	3.99	3.97	106	106	70.0-139			0.503	25
Methyl Methacrylate	3.75	3.94	3.79	105	101	70.0-130			3.88	25
MTBE	3.75	3.68	3.93	98.1	105	70.0-130			6.57	25
Naphthalene	3.75	3.54	3.18	94.4	84.8	70.0-159			10.7	25

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (MS) by Method TO-15

L1469234-01

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3768290-1 03/09/22 08:58 • (LCSD) R3768290-2 03/09/22 09:42

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2-Propanol	3.75	3.66	3.80	97.6	101	70.0-139			3.75	25
Propene	3.75	3.40	3.30	90.7	88.0	64.0-144			2.99	25
Styrene	3.75	4.26	4.03	114	107	70.0-130			5.55	25
1,1,2,2-Tetrachloroethane	3.75	3.86	3.80	103	101	70.0-130			1.57	25
Tetrachloroethylene	3.75	4.25	4.21	113	112	70.0-130			0.946	25
Tetrahydrofuran	3.75	3.66	3.77	97.6	101	70.0-137			2.96	25
1,2,4-Trichlorobenzene	3.75	3.39	3.14	90.4	83.7	70.0-160			7.66	25
1,1,1-Trichloroethane	3.75	3.77	3.77	101	101	70.0-130			0.000	25
1,1,2-Trichloroethane	3.75	4.13	4.12	110	110	70.0-130			0.242	25
Trichloroethylene	3.75	4.12	3.98	110	106	70.0-130			3.46	25
1,2,4-Trimethylbenzene	3.75	3.93	3.83	105	102	70.0-130			2.58	25
1,3,5-Trimethylbenzene	3.75	3.97	3.80	106	101	70.0-130			4.38	25
2,2,4-Trimethylpentane	3.75	3.86	3.84	103	102	70.0-130			0.519	25
Vinyl chloride	3.75	3.78	4.04	101	108	70.0-130			6.65	25
Vinyl Bromide	3.75	3.66	4.35	97.6	116	70.0-130			17.2	25
Vinyl acetate	3.75	2.79	2.89	74.4	77.1	70.0-130			3.52	25
o-Xylene	3.75	4.02	3.89	107	104	70.0-130			3.29	25
1,1-Difluoroethane	3.75	3.46	3.26	92.3	86.9	70.0-130			5.95	25
1,2,3-Trimethylbenzene	3.75	3.94	3.85	105	103	70.0-130			2.31	25
Chlorodifluoromethane	3.75	3.87	3.94	103	105	70.0-130			1.79	25
Ethyl acetate	3.75	3.61	3.70	96.3	98.7	70.0-130			2.46	25
Tert-Amyl Ethyl Ether	3.75	3.86	3.82	103	102	70.0-130			1.04	25
(S) 1,4-Bromofluorobenzene				89.8	87.4	60.0-140				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15

[L1469234-01](#)

Method Blank (MB)

(MB) R3768678-3 03/10/22 20:22

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Cyclohexane	U		0.0753	0.200
Heptane	U		0.104	0.200
n-Hexane	U		0.206	0.630
Toluene	U		0.0870	0.500
m&p-Xylene	U		0.135	0.400
TPH (GC/MS) Low Fraction	70.5	<u>J</u>	39.7	200
(S) 1,4-Bromofluorobenzene	100			60.0-140

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3768678-1 03/10/22 19:18 • (LCSD) R3768678-2 03/10/22 19:51

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Cyclohexane	3.75	3.55	3.46	94.7	92.3	70.0-130			2.57	25
Heptane	3.75	3.48	3.48	92.8	92.8	70.0-130			0.000	25
n-Hexane	3.75	3.49	3.43	93.1	91.5	70.0-130			1.73	25
Toluene	3.75	3.62	3.55	96.5	94.7	70.0-130			1.95	25
m&p-Xylene	7.50	6.85	7.10	91.3	94.7	70.0-130			3.58	25
TPH (GC/MS) Low Fraction	203	261	265	129	131	70.0-130		<u>J4</u>	1.52	25
(S) 1,4-Bromofluorobenzene				101	100	60.0-140				

⁷Gl

⁸Al

⁹Sc

Volatile Organic Compounds (MS) by Method TO-15

[L1469234-01](#)

Method Blank (MB)

(MB) R3769296-3 03/11/22 07:34

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Methyl Cyclohexane	U		0.0813	0.200
(S) 1,4-Bromofluorobenzene	98.1			60.0-140

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3769296-1 03/11/22 06:16 • (LCSD) R3769296-2 03/11/22 06:56

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Methyl Cyclohexane	3.75	3.93	3.96	105	106	70.0-130			0.760	25
(S) 1,4-Bromofluorobenzene				99.5	99.2	60.0-140				

Organic Compounds (GC) by Method D1946

L1469234-01

Method Blank (MB)

(MB) R3770058-3 03/15/22 12:47

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	0.752		0.225	5.00
Carbon Monoxide	U		0.665	2.00
Carbon Dioxide	U		0.121	0.500
Methane	U		0.0584	0.400

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3770058-1 03/15/22 12:33 • (LCSD) R3770058-2 03/15/22 12:40

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	20.0	19.2	19.0	96.0	95.0	70.0-130			1.05	20
Carbon Monoxide	2.50	2.89	2.88	116	115	70.0-130			0.347	20
Carbon Dioxide	2.50	2.50	2.47	100	98.8	70.0-130			1.21	20
Methane	2.00	1.83	1.72	91.5	86.0	70.0-130			6.20	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J4	The associated batch QC was outside the established quality control range for accuracy.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		



¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: clients.hallenvironmental.com

H173

SUB CONTRACTOR	Pace TN	COMPANY	PACE TN	PHONE:	(800) 767-5859	FAX:	(615) 758-5859
ADDRESS	12065 Lebanon Rd			ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP	Mt. Juliet, TN 37122						U469234

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2203433-001A	SVE Sample	TEDLAR	Air	3/7/2022 11:15:00 AM	2	CO2, Oxygen, TO-15 + TPH

Sample Receipt Checklist

COC Seal Present/Intact: Y N If Applicable

COC Signed/Accurate: Y N VOA Zero Headspace: Y N

Bottles arrive intact: Y N Pres. Correct/Check: Y N

Correct bottles used: Y N

Sufficient volume sent: Y N

RAD Screen <0.5 mR/hr: Y N

Fedex: 5528 5947 9363

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

OK

Relinquished By:	Date: 3/8/2022	Time: 9:28 AM	Received By:	Date: 3/19/22	Time: 9:30	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE FOR LAB USE ONLY Temp of samples AMB °C Attempt to Cool? <input type="checkbox"/> Comments:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
TAT: Standard	RUSH	Next BD	2nd BD	3rd BD		



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2203433 RcptNo: 1

Received By: Tracy Casarrubias 3/8/2022 7:45:00 AM

Completed By: Tracy Casarrubias 3/8/2022 9:21:11 AM

Reviewed By: RPK 3/8/22

Chain of Custody

- 1. Is Chain of Custody complete? Yes [checked] No [] Not Present []
2. How was the sample delivered? Courier

Log In

- 3. Was an attempt made to cool the samples? Yes [checked] No [] NA []
4. Were all samples received at a temperature of >0° C to 6.0°C Yes [] No [checked] NA []
5. Sample(s) in proper container(s)? Yes [checked] No []
6. Sufficient sample volume for indicated test(s)? Yes [checked] No []
7. Are samples (except VOA and ONG) properly preserved? Yes [checked] No []
8. Was preservative added to bottles? Yes [] No [checked] NA []
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes [] No [] NA [checked]
10. Were any sample containers received broken? Yes [] No [checked]
11. Does paperwork match bottle labels? Yes [checked] No []
12. Are matrices correctly identified on Chain of Custody? Yes [checked] No []
13. Is it clear what analyses were requested? Yes [checked] No []
14. Were all holding times able to be met? Yes [checked] No []

of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by: jn 3/8/22

Special Handling (if applicable)

- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [checked]

Person Notified: [] Date: []
By Whom: [] Via: [] eMail [] Phone [] Fax [] In Person []
Regarding: []
Client Instructions: []

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, NA, Good, Yes, [], [], []

District I
 1625 N. French Dr., Hobbs, NM 88240
 Phone:(575) 393-6161 Fax:(575) 393-0720

District II
 811 S. First St., Artesia, NM 88210
 Phone:(575) 748-1283 Fax:(575) 748-9720

District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
 1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 98963

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 98963
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See App ID 125737 for most updated status.	9/23/2022